

Legs red ; front coxæ yellow, the four hinder ones black, streaked with yellow on the sides ; front femora black at the base and beneath, middle femora with two black stripes, and tibiæ and tarsi varied with black ; hind legs almost entirely blackish above.

Wings smoky hyaline, yellowish towards the costa, as in *P. pallipes*, St.-Farg., to which this species is most nearly allied ; but the second submarginal cell is smaller and irregularly hexagonal, and the recurrent nervure which enters it is much more distinctly curved outwards in the middle than in *P. pallipes*.

Collected by Herr Michaelis at Lagos, Brazil, Feb. 2, 1887.

The nest and a quantity of grubs were also obtained. The former much resembles that of *P. tepidus*, Fabr., figured by Saussure ('Guêpes Sociales,' pl. viii. fig. 1), except that the pedicel is thicker.

XVIII.—On new Species of Formicarious Histeridæ, and Notes on others. By GEORGE LEWIS, F.L.S.

HAVING at the present time a fairly complete collection of the known *Heterii* and of the species in the genera which resemble them, I have interspersed with the descriptions of new species notes on some of the characteristics of such of the old ones as have not hitherto been fully dealt with by authors. I refer chiefly to the specific differences exhibited in the sternal plates. The first *Heterius* known to naturalists was described by Olivier in 1789 as *Hister ferrugineus* ; the second, *puberulus*, by Motschulsky in 1837 ; and even as late as 1868 only seven species appear in the 'Munich Catalogue,' as two of the nine given by Harold stand now in *Satrapes* and *Echinodes*. Our list now contains thirty-three, and I propose to separate twenty-four of these from the others under the generic name of *Sternocælis*, as the meso- and metasterna are widely and deeply excavated, leaving only those in *Heterius* which correspond more or less in the structure of the mesosternum with *Hister ferrugineus*, Olivier ; and these last really agree better with *Eretmotus* than with *Sternocælis*.

I do this the more readily because the structure of the sternal plates in the Histeridæ is very important, and in studying the family careful regard must be paid to it.

*Pachycrærus* is known from *Platysoma* by the apex of the mesosternum being produced and by its entering the region of the prosternum, which is proportionally incised to receive it; and as we go further down in the catalogue of genera the structure of the sterna receives fuller recognition. And beyond this several describers of species, myself included, have not always been careful in examining and recording the characters which exist in a prominent degree on the under surface of some species when the superstructure fails to suggest details for a satisfactory diagnosis.

The undersides of the Histeridæ are of the utmost importance in classification and intensely interesting as a study of structure. I do not anticipate the discovery of many new species in the genus *Satrapes*, but in *Heterius* and *Sternocælis* the next few years are certain to bring many to us, as entomologists are becoming alive to the fact that numbers exist, and that the species, if properly sought for, are not difficult to find. I have taken eleven species myself this year.

*Heterius gratus*, Lewis.

This species is very similar to *ferrugineus* above and below, but the prosternal striæ meet each other more acutely in front, and being less sinuate are not at any place so widely separated as in Olivier's species.

*Heterius brunneipennis*, Rand.

The sterna here also correspond very closely with those of *ferrugineus*, but the prosternal lines are not sinuate at the coxæ, and, being straighter laterally, they enclose a space which resembles an elongate triangle.

*Heterius plicicollis*, Fairm.

The substructure of this insect is peculiar in the widening out, on the same plane as the base, of the anterior lobe of the prosternum, and the limit of the lobe is indicated by a marginal line. The striæ at the base of the prosternum are confined to the region of the coxæ, and the lateral excavations of the mesosternum are small and relatively shallow.

*Heterius optatus*, Lewis.

The prosternum is broad and densely opaque, with large

and rough punctures closely set together. The anterior lobe is a little deflexed, and the lateral striæ are almost parallel, and therefore end anteriorly widely apart. The mesosternum in front is transversely bistrate, and the lateral foveæ, which constitute the character of a true *Heterius*, are very shallow.

*Heterius tristriatus*, Horn.

Several of the American *Heterii* are very differently constructed from those of the Old World. This species is one of them. The prosternum is parallel and prominently built out in the central region, and the median part also of the lobe is abruptly built up in the same way; but the sides of the lobe maintain their normal level, and thus the lobe is tripartite; the striæ are very distinct, parallel, and close together in front, widening out only at the coxæ. The mesosternum is marginate in front and bow-shaped; the lateral pits are shallow.

*Sternocælis acutangulus*, Lewis.

Breviter ovatus, brunneo-ferrugineus, sat nitidus; thorace dense ocellato-punctato, angulis posticis transversim productis; tibiis anticis aspere ocellato-punctatis.

L. 2·8, c.  $3\frac{1}{4}$  mill.

Head and thorax densely punctate, punctures ocellated, especially behind the neck. Forehead with two lateral striæ, which are feebly biangulate and do not meet in front, but continue down part of the clypeus parallel to each other. The thorax is punctate throughout its entire surface, which gives an appearance of opacity; the anterior angles are obtusely produced and slightly reflexed, the sides are narrowly marginate and somewhat parallel for about three fourths of the length, with the posterior angles produced and acuminate. There is a small, rather transverse fovea at the base of the angle, and the scutellum is smooth and triangular. The elytra have three striæ—first complete, second evanescent posteriorly, third basal and short; the dorsal surface is punctulate throughout, with the apices of the elytra clothed with erect hairs. Prosternum broadly canaliculate, the canaliculation being shining, with a few irregular punctures, deep and somewhat narrowed in front, shallow and broad behind, and a little sinuate before the coxæ; the base is broadly emarginate, with the angles on either side produced somewhat acutely behind the coxæ. The sides of the thorax beneath are densely and

ocellately punctured. The metasternum is finely and feebly punctulate and wholly depressed, the depression being so deep anteriorly that the mesosternum is almost vertical. Propygidium and pygidium feebly and sparsely punctate, the first having erect hairs. The fore legs are opaque, roughly and densely punctate, punctures rough and often ocellate; the second and third pairs are smoother on the inner surface, with the tibiæ very broad and equilaterally triangular.

This species resembles *S. Bedeli*, Lewis (Ent. Month. Mag. vol. xxi. 1884, p. 83), in the dilatation of the tibiæ, but there the similitude ceases. In *S. Bedeli* the thoracic punctures are scattered irregularly and only a few are ocellated. This is the largest species at present known. Mr. J. J. Walker first discovered it at Tangier, and afterwards found it in Spain, where he also took *Eretmotus tangerianus*. I took fifteen specimens at Tangier last spring.

*Sternocælis cancer*, n. sp.

Breviter ovatus, nitidus, postice parce fulvo-hirtus, nigro-piceus, pedibus dilutioribus; fronte opaca, grosse punctata, stria valida; pronoto angulis obliquis, antice vix dense ocellato-punctato, postice parce punctulato; elytris undique punctulatis, tristriatis; prosterno lato in medio transversim elevato, grosse ocellato-punctato, stria basi sinuata, lobo deflexo et læviter emarginato, tibiis valde dilatatis.

L. 2, c.  $2\frac{1}{2}$  mill.

This species is much larger and darker in colour than *S. punctulatus*, and it wants the close pubescence of *S. Bedeli*. The dorsal region is very distinctly punctulate and the prosternum is relatively wider than in the species named, and the transverse ridge is more conspicuous. The frontal striæ of *Bedeli* and *cancer* are similar, strong and complete at the sides, but opening out behind the clypeus, and running for a very short distance parallel to each other. In *cancer* the front tibiæ are sometimes emarginate on the outer edge, and this may be a sexual character. The examples I have vary a good deal in size.

I found this species at Hamman Rirha, Algeria, last February, and noticed that it was less subterraneous than the yellow species; this may account for its colour, which is nearly black.

*Sternocælis Bedeli*, Lewis.

Subrotundatus, piceo-ferrugineus, vix dense sericeo-pubescent, punc-

tulatus; fronte grosse punctata, stria marginali subintegra elevata; pronoto subtransverso, parte anteriore dense sat grosse punctata, angulis anticis obtusis reflexis; elytris tristriatis, primo integro, secundo ultra medium, tertio antice abbreviatis; pygidio piloso; prosterno grosse punctato, meso- et metasterno profunde excavatis; pedibus robustis, tibiis angulato-dilatatis.

L.  $2\frac{1}{2}$ , c.  $2\frac{3}{4}$  mill.

This species may be placed near *punctulatus*, but it is very distinct from all on the list. Its colour and the density of its pubescence, the thickly-set punctures on the anterior part of the thorax, its larger size, and broad tibiæ are its most conspicuous specific characteristics. The prosternum of this species and that of *punctulatus* are on a similar plan, but the punctures are closer together and the transverse ridge more distinct. The tibiæ are nearly as much dilated as those of *Eretmotus sociator* or *tangerianus*, and they are angulated in the same way, and therefore resemble those of *S. cancer*.

Mons. L. Bedel captured three examples at Daya, in the province of Oran, November 1879.

*Sternocælis hispanus*, Rosenh.

This species I have taken in Spain (thanks to the kindness of Prof. Don Francisco Martínez y Saez) three times—twice at Madrid and once at the Escorial. At the latter place, on the 29th April last, I found as many as fifteen in one nest of *Aphanogaster*. At Fontanellus, near Cintra, in April 1884, I took one hundred and seventy-six specimens; and this species and *Hister ferrugineus*, Ol., which I took at Bom Jesus the same year, are the only two species yet known from Portugal. Collectors in Portugal will doubtless find others when they search for them in the nests of *Aphanogaster* under stones on clayey slopes. The two insects mentioned here are sand-loving species.

*Sternocælis comosellus*, Fairm.

“Breviter ovatus, rufo-castaneus, sat nitidus, sat longe et sat dense fulvo-hirtus; capite dense punctato; prothorace transverso, elytris sensim angustiore, lateribus fere parallelis sed basi ampliato, angulis posticis divaricatis, acutis, dorso dense punctato, ad latera densius, basi ante angulos leviter impresso; elytris convexis, sat dense, sat fortiter asperulo-punctatis, obsolete lineatis, sutura angustissime infuscata; propygidio pygidioque parum dense punctatis; pedibus sat elongatis, compressis, tibiis anticis apicem versus parum ampliatis.

“Philippeville.

“Ressemble beaucoup à l'*H. hispanus*, le corselet étant aussi plus étroit en avant que les élytres, avec les côtés parallèles, brusquement élargis à la base pour former les angles postérieurs, qui sont aigus et embrassent assez la base des élytres; il en diffère par la taille plus faible, la ponctuation plus forte, les impressions de la base du corselet droites et non dirigées obliquement en travers des angles, qui sont plus aigu.”

This species I have not seen, but I am assured by Herr Joh. Schmidt, who has seen the type, that it differs specifically from all the others on the list at the end of this paper. The type is in Baron Bonnaire's collection.

*Sternocælis setulosus*, Reitter.

I took this species on the cliffs to the east of Oran and also at Tlemcen. It is dark in colour, and the thorax is much more transverse than in *fulvus* and *Walkeri*. The prosternal striæ are not very clearly defined, but they are sinuate and turn inwards at the tips. This species stands in some collections as *cavisternus*, Marseul; but the latter name is a synonym of *punctulatus*, Lucas. Herr Reitter has very kindly lent me the type for examination and comparison.

*Sternocælis Walkeri*, n. sp.

Breviter ovatus, ferrugineus, subnitidus, fulvo-setulosus; fronte obscure punctulata, stria ad oculos angulatim elevata; pronoto angulis anticis obliquis, posticis obtuse productis, lateribus marginato parce punctulato; prosterno sublævi bistriato, tibiis modice dilatatis.

L.  $1\frac{3}{4}$  mill.

This species is smaller than *hispanus*, with the thorax more quadrate and its hinder angles much less acute; the legs are much shorter, but the dilatation of the tibiæ is almost identical, and the striæ, form, and sculpture of the prosternum are the same. *Walkeri* is also similar to *fulvus*, but it is larger; the first has the base of the thorax wider, and the second has the striæ over the eyes less elevated. In *hispanus* the sternal pit is distinctly angulate in the centre, in *Walkeri* and *fulvus* it is not so.

I took two examples of this insect at Maison Carrée, near Algiers, on the 8th March, 1884; and I have seen other specimens labelled Algiers. This species is named after Mr. J. J. Walker, whose name appears on several of these pages.

*Sternocælis fulvus*, n. sp.

Breviter ovatus, rufo-ferrugineus, sat dense fulvo-setulosus; fronte obscure punctulata, stria utrinque elevata, antice late interrupta; pronoto lateraliter bisinuato, angulis posticis obtusis; elytris tenue et obscure tristriatæ; tibiis modice dilatatis.

L.  $1\frac{1}{2}$ , c.  $1\frac{3}{4}$  mill.

The above is similar to *setulosus*, *hispanus*, and *Walkeri*, but it is smaller, the thorax is less transverse, and the dilatation of the tibiæ less, and the prosternal striæ are a little more parallel to each other and better defined. The sternal pit is also slightly deeper than in *setulosus* or *Walkeri*.

I obtained a great number of this species in Algeria, at Hamman Rirha (altitude 2300 feet), this spring.

*Sternocælis arachnoides*, Fairm.

This insect has long narrow legs, but in its general structure it is similar to those of the *hispanus*-group. The prosternum has well-defined striæ, which are sinuate at the coxæ and then pass forward, widening out slightly from each other. The meso- and metasternal basin is more circular than in the other species known at present.

*Sternocælis puberulus*, Motsch.

The prosternum of this species is of very curious structure. It is very prominent, punctured, and without striæ, and the anterior lobe is very short and transverse. I am much indebted to Signor Enrico Ragusa for a specimen of this species. *Heterius ferrugineus* is the only species of the Myrmecophilous Histeridæ known from Italy; it is associated with *Formica fusca*. When the nests of *Aphanogaster* are investigated, one or more new species will possibly be found in Sicily or on the adjacent mainland.

*Sternocælis Lewisi*, Reitter.

In this species the space between the prosternal striæ is narrow and the striæ are very parallel to each other, widening out only on approaching the base. *S. Merklii*, Schmidt, is compared by the author to *Lewisi*; but the prosternum is concave and apparently without striæ.

*Sternocælis extractisternum*, n. sp.

Subrotundatus, ferrugineus, subnitidus, fulvo-pilosus, punctulatus;

fronte opaca, dense punctata, pronoto transverso, antice grosse punctata; elytris tristriatis, punctulatis; propygidio parvè punctato piloso; prosterno prominulo grosse punctato; metasterno leviter tuberculato; tibiis anticis modice, mediis et posticis valide angulato-dilatatis.

L.  $2\frac{1}{2}$  mill.

In size and general outline this species agrees with *Lewisi*, Reitter, but it is very pubescent and the prosternum is on quite a different plan. The thoracic punctures are large in front and many are ocellated; but they gradually become smaller and fewer towards the base. The thorax is sinuate laterally, with the hind angles obtuse.

The prosternum is rather wide between the striæ, with large rough punctures, striæ situate between the coxæ and terminate widely apart before the anterior lobe, posteriorly the striæ join to form a margin to the base. The part of the prosternum comprised within the striæ is built up and is on a different plane from the lobe. The mesosternum has a robust apex, which projects well into the prosternum. The metasternum has a small linear tubercle in the anterior median part of its basin, and its whole surface is distinctly but sparsely punctulate.

Algeria (coll. Mouchicourt); no special locality given.

*Sternocælis grandis*, Reitter.

The upper surface of this insect is almost identical with that of *lævidorsis*, Fairm., but the prosternum is not striated, it is only roughly and closely punctate. Herr Reitter has kindly allowed me to see the unique specimen. In *lævidorsis* the striæ of the prosternum are distinct ridges, sinuate between the coxæ and very slightly bent inwards at the tips, and the anterior lobe is short and transverse. Mons. R. Oberthür first discovered *lævidorsis* at Bousaada, in Algeria, and more recently it has been taken at Blida by Prof. Ignacio Bolivar.

The four following species are small and very similar in their superficies:—

*Sternocælis pluristriatus*, Fairm.

This agrees closely in many of its characters with *fuscus*, but the thoracic punctures are more sparse and smaller and apparently not ocellated. The prosternum is also broader and the striæ seem to meet anteriorly.



*Sternocælis mauritanicus*, n. sp.

Breviter ovalis, rufo-brunneus, nitidus, punctulatus, haud pilosus; fronte, stria utrinque paulo elevata, antice interrupta, obscure punctulata; pronoto antice vix dense, postice parce, punctato; elytris distincte tristriatis, tertio postice abbreviato; tibiis anticis circulatim, posticis angulatim, valde dilatatis.

L.  $1\frac{1}{2}$ , c.  $1\frac{3}{4}$  mill.

This insect above is closely similar to *fusculus* and *pectoralis*, and agrees with them in colour; but beneath the characters to separate it are well defined. The prosternal striæ are connected at the base, and form there a margin to the prosternum; they are very feebly sinuate at the coxæ and anteriorly slightly bent towards each other; the lobe is deflexed. The apex of the mesosternum is moderately projecting and correspondingly sinuate. The thorax is punctured very much like that of *pluristriatus*.

I took this little insect in Morocco on the slope of a hill about two miles from the sea-shore (starting from the ruins of Old Tangier), on the 9th April last. Within the precincts of the same ants' nest I obtained eight specimens of *S. arachnoides* and three of *acutangulus*.

*Sternocælis fusculus*, Schmidt.

Mr. J. J. Walker has found this insect at S. Roche, in Spain; and Signor Serafin Uhagon has taken it in flood-refuse at Badajoz.

*Sternocælis pectoralis*, n. sp.

Breviter ovalis, rufo-brunneus, nitidus, haud pilosus; fronte punctulata, stria utrinque sinuata paulo elevata; pronoto antice magis, postice parce, punctato; elytris punctulatis tristriatis, striis distincte impressis; prosterno prominulo, stria laterali antice sinuata, basi obscure continuata, in medio transverso elevato et parce punctato; mesosterno antice valde producto; tibiis mediis et posticis fortiter angulato-dilatatis.

L.  $1\frac{3}{4}$  mill.

The superficies of this insect agrees somewhat with that of *pluristriatus*, Fairm., of which I possess a type through the kindness of the author. *S. pluristriatus* belongs to a section of the genus which has the elytral striæ clearly defined, and in this section those set together in the list may be included.

*S. pectoralis* has the prosternal area between the coxæ and the base of the anterior lobe divided in the middle by a very prominent transverse ridge; and if the prosternum is viewed sideways this character will be seen conspicuously. *S. pluristriatus* has a trace of this structure, but it is very feebly brought out.

I took this species at Tlemcen, in Algeria, near the ruins of Mansourah, on the 20th March last, while snow was falling thickly; and I had to use my umbrella to shelter the galleries made by the ants, which otherwise would have been filled up and ants and beetles lost sight of.

*Sternocœlis Marseuli*, Bris., has the prosternal striæ formed on a plan similar to that of *Gnathoncus rotundatus*, Kugel; it is a little smaller than *mauritanicus* and pubescent.

*Satrapes Reitteri*, n. sp.

Subcylindricus, convexus, testaceus, nitidus, parce punctulatus; fronte utrinque elevata, sat dense punctulata, clypeo concavo; pronoto in medio convexo, lateribus marginato, angulis anticis paulo reflexis; elytris brevissime setulosis, striis obsoletis, tibiis dilatatis.

L.  $2\frac{1}{4}$  mill.

Taken by Herr Hans Leder at Talyschgebog (Transcaucasus), and I have named it after my friend at Mödling.

This species is larger than *talyschensis*, paler in colour, and more parallel in outline. The anterior angles of the thorax are reflexed in the same way, but are more rounded off. The sublumeral striæ are wider apart and the dorsal striæ quite obsolete; the propygidium is more clearly angulate at the sides and somewhat densely but finely punctulate. Beneath it is known at once from *talyschensis* by the lobe of the prosternum being on the same plane as the base, by the sternum being narrower between the coxæ, and the striæ in front of them are brought close together and then pass forwards in a parallel direction. In *talyschensis* the prosternal striæ are marginal, and therefore wide apart. In *Sartorii* the striæ are more like those of *Reitteri*, but anteriorly they diverge and the lobe of the prosternum is deflexed. This last character is given by Schmidt as generic; as the new species does not possess it, the generic characters must be modified accordingly.

## List of Species, arranged systematically.

- HETÆRIUS, Erichson, Jahrb. p. 156 (1834). (Type *ferrugineus*.)
- *ferrugineus*, Oliv. Ent. I. viii. p. 19, t. i. fig. 7. 1789 }  
     *quadratus*, Kugel. Schneid. Mag. i. p. 519. 1792 }  
     *sesquicornis*, Preyssl, Mayer. Samml. phys. 1793 } Europe.  
         Aufs. ii. p. 3 ..... 1863 }  
     *Marseuli*, Schaut. Sitz. Ges. Isis, p. 197 1864 }  
         Mars. Abeille, i. p. 348 ..... 1864 }
- *gratus*, Lewis, Ann. & Mag. Nat. Hist. vol. xiii. 1884 Japan.  
     p. 137 .....
- \**californicus*, Horn, Trans. Am. Ent. Soc. 1870 North America.  
     p. 137 .....
- \**Blanchardi*, Lec. Proc. Am. Phil. Soc. xvii. 1878 North America.  
     p. 609 .....
- *brunneipennis*, Rand. Bost. Journ. ii. p. 40 1839 }  
     Mars. Mon. p. 433, t. ii. n. 28, fig. 2 1857 } North America.
- *plicicollis*, Fairm. Pet. Nouv. ii. n. 151, p. 49 1876 Algeria.
- *optatus*, Lewis, Ann. & Mag. Nat. Hist. vol. xiii. 1884 Japan.  
     p. 137 .....
- *tristriatus*, Horn, Trans. Am. Ent. Soc. v. 1874 North America.  
     p. 21 .....
- \**morsus*, Leconte, Proc. Ac. Phil. p. 70. .... 1859 North America.
- STERNOCÆLIS, n. gen., 1888. (Type *acutangulus*.)
- *acutangulus*, Lewis, Ent. M. M. xxiv. p. 164 1887 Morocco and Europe.
- *cancer*, Lewis, n. sp. .... 1888 Algeria.
- *Bedeli*, Lewis, Ent. M. M. xxi. p. 83 ..... 1884 Algeria.
- *punctulatus*, Lucas, Ann. Soc. Ent. Fr. 3 sér. 1855 }  
     t. iii. p. 4 ..... 1857 } Algeria.  
         Mars. Mon. p. 432, t. ii. n. 28, fig. 1 1862 }  
         *cavisternus*, Mars. Mon. Cat. p. 713 ..... 1876 }  
         *lioderus*, Fairm. Pet. Nouv. ii. n. 148, p. 37 1876 }
- *politus*, Schmidt, Ent. Nachrichten ..... 1888 Algeria.
- *hispanicus*, Rosenh. Thier. Andal. p. 89. .... 1856 Europe.
- \**comosellus*, Fairm. C. R. Soc. Ent. Belg. 1883 Algeria.  
     xxvii. p. 13 .....
- *setulosus*, Reitter, Berl. ent. Zeitschr. xvi. p. 179 1872 Algeria.
- *Walkeri*, Lewis, n. sp. .... 1888 Algeria.
- *fulvus*, Lewis, n. sp. .... 1888 Algeria.
- *Bonnairei*, Schmidt, Ent. Nachrichten ..... 1888 Algeria.
- *arachnoides*, Fairm. Pet. Nouv. ii. n. 163, p. 98 1877 Morocco.
- *puberulus*, Motsch. Bull. Mosc. p. 123 ..... 1837 }  
     Etud. Ent. p. 188. .... 1858 } Europe.  
     *Palumboi* (Eretmotus), Ragusa, Nat. Sicil. 1881 }  
         i. p. 7 .....
- \**Merklii*, Schmidt, Deutsch. ent. Zeitschr. p. 238 1885 Europe.

Sternocelis Lewis, Reit. Wien. ent. Zeit. ii. p. 143	1883	} Europe.
Reit. Deutsche ent. Zeitschr. xxviii. p. 75, pl. i. fig. 4. ....	1884	
— exstructisternum, Lewis, n. sp. ....	1888	Algeria.
— grandis, Reitter, Wien. ent. Zeit. ii. p. 143 ..	1883	Europe.
— lævidorsis, Fairm. Pet. Nouv. ii. n. 148, p. 37	1876	Algeria.
— incisus, Schmidt, Deutsch. ent. Zeitschr. xxix. p. 440 .....	1885	Europe.
— pluristriatus, Fairm. Pet. Nouv. n. 163, p. 98	1877	Algeria.
— fuscus, Schmidt, Ent. Nachrichten .....	1888	Europe.
— mauritanicus, Lewis, n. sp. ....	1888	Morocco.
— pectoralis, Lewis, n. sp. ....	1888	Algeria.
— Marseuli, Bris. Ann. Soc. Ent. Fr. p. 367 ....	1866	Europe.
SATRAPES, Schmidt, Deutsch. ent. Zeitschr. xxix.	1885.	(Type <i>talyschensis</i> .)
— Sartorii, Redtenb. Fn. Austr. p. 311 .....	1858	} Europe.
Rayei (Eretmotus), Mars. Abeille, i. p. 348	1864	
— Reitteri, Lewis, n. sp. ....	1888	Europe.
— talyschensis, Reitter, Wien. ent. Zeit. ii. p. 143	1883	Europe.

*Note.*—An asterisk is attached to the species I have not seen. If naturalists who go to mountainous places and remote forest-lands to collect insects will pay attention to this class of beetles, the number in our cabinets will be quickly doubled.

### XIX.—*Biological Studies of Protista.*

By Dr. MAX VERWORN\*.

[Plate IX.]

I MADE the following researches on Protista when, for the purpose of certain psychophysiological investigations which will hereafter be published in their entirety, I set myself the task of observing the process of shell-formation in the shelled freshwater Rhizopoda. In the case of those forms which build their shells with materials produced by themselves this process has been described and illustrated with figures in previous memoirs, especially by Gruber †, and recently in a very detailed fashion by Schewiakoff ‡; and therefore my

\* Translated from the 'Zeitschrift für wissenschaftliche Zoologie,' Band xlvi. pp. 455–470, with a plate.

† A. Gruber, "Der Theilungsvorgang bei *Euglypha alveolata*," in Zeitschr. f. wiss. Zool. Bd. xxxv., and "Die Theilung der monothalamen Rhizopoden," *ibid.* Bd. xxxvi.

‡ W. Schewiakoff, "Ueber die karyokinetische Kerntheilung von *Euglypha alveolata*," in Morph. Jahrb. Bd. xiii.